REMARKS

Claims 1-2 and 4-20 are pending.

Claims 1, 13 and 14 are amended.

Claims 1-19 are rejected.

Claim 20 is new.

New claim 20

New claim 20 is supported by paragraphs 2 and 3 on page 3 of the specification

35 USC 112, second paragraph

Claim 13 is rejected under 35 USC 112, second paragraph as being indefinite.

The Examiner is correct in that the last amendment failed to delete the phrase "at or below said maximum". This phrase should have been deleted in the last amendment. Thus the Applicants confirms that the Examiner is correct to interpret the claim as if the phrase has been deleted.

Further, the Applicants have amended claim 13 to correct a spelling error.

Claims 1-4, 14-16 and 19 are rejected under 35 USC 112, second paragraph.

Claims 1 and 14 are amended to read:

Claim 1

A sized paper or board which paper or board is sized with a composition comprising an aqueous emulsion of alkenyl succinic anhydride wherein the alkenyl succinic anhydride incorporates a maximum of 1% by weight of polymeric residues and contains less than 5% by weight of olefins.

Claim 14

A sized paper or board comprising paper or board sized with a composition comprising an aqueous emulsion of alkenyl succinic anyhydride wherein the alkenyl succinic anhydride incorporates a maximum of 1 % by weight of polymeric residues and contains less than 5% by weight of olefins and

the alkenyl succinic anhydride has a lower Gardner color when compared to alkenyl succinic anhydride having 7-9 % by weight polymeric residues.

No new matter is added.
The Applicants believe the above amendments correct the 112, second paragraph rejection.

Support for the above amendments may be found on page 2, first paragraph.
No new matter is added.

35 USC 103(a)

Claims 1-19 are rejected under 35 USC 103(a) as being unpatentable over Tansley et al in view of Fakoukakis, US 4956478 and further in view of Frohlich, US 5969011 and Sonoda, JP 62106091.

The examiner asks the question " from the disclosures of Tansley et al and Fakoukakis and the knowledge generally available to one of ordinary skill in the art, why would it not have been obvious to use ASA of the highest possible purity as the sizing agent in the paper of Tansley? See page 4 of the Office Reply, third paragraph.

Firstly, the Applicants do not need to answer the Examiner's question above. While a purer product **may** be desirable, it is not obvious to one skilled in the art that the reduction of certain impurities (polymeric residues) would lead to a better sized paper or board-better lactic acid resistance and better peroxide resistance. The Applicants have discovered that the removal of the polymeric and olefinic residues in ASA give a sized paper or board which when used as paper sizing, shows better performance. See page 13 under Summary and Conclusions. Thus the Applicants believe that the compositions of Fakoukakis when used in the paper of Tansley, show unobvious results. The combination of the two references must therefore be unobvious.

The Applicants maintain that the combination of Tansley with Fakoukakis leads to unobvious results on a sized paper or board. This is especially true as Fakoukakis makes no mention of papermaking. Tansley only mentions ASA in passing and is primarily concerned with AKD.

Secondly, Tansley says "any **conventional** cellulose-reactive paper sizing agent,including, for example, alkenyl succinic anhydride, as well as ketene dimmers, may be usefully employed in this

invention". Then Tansley discloses only the use of ketene dimer. If Tansley choose to use alkenyl succinic anhydride (ASA) instead of ketene dimer, Tansley would look for help at one or several hyndreds (if not thousands) of publications disclosing the use of ASA as paper sizing agent. As Tansley explicitly states he would have looked for a **conventional** cellulose-reactive paper sizing agent . Thus there would be no reason why Tansley would look to those few publications, e. g. Fakoukakis and Sonoda which disclose an **unconventional** cellulose-reactive paper sizing agent (essentially free from olefins and residual polymers).

In other words, Tansley would have no motivation to look at purified ASAs as the market and publications are telling him to use non-purified ASA which is conventional. Why would Tansley choose more technically sophisticated and more expensive products as he considers **conventional** ASA as an alternative for ketene-dimer. Tansley simply would not look to Fakoukakis to avoid unwanted by-products to eliminate an extra distillation step as Tansley would not see these as unwanted by-products. As Tansley states, **conventional** (not purified) ASA might replace ketene-dimer.

Furthermore, Sonoda uses high purity ASA for information recording material. Sonoda says explicitly that "alkenyl succinic anhydride is used in the form of a mixture that contains a tar substance and high molecular weight polymer for regular purposes such as sizing. Thus Sonoda teaches away from using anything but **conventional** ASA for paper.

Applicants respectfully submit that the motivation to replace the ASA of Tansley for the purified ASA of Fakoukakis or Sonoda is not present. Furthermore, that the results obtained using the ASA incorporating a maximum of 1 % by weight of polymeric residues and less than 5% by weight of olefins are unobvious.

The examiner has stated that " the data are insufficient to support broadly stated claims..."

Applicants have narrowed the claims to be commensurate with the scope of the showing. Thus the ASA contains a maximum of 1% by weight of polymeric residues and less than 5 % by weight of olefins.

The examiner states that the specification does not indicate how the ASA was applied to the papers. See Office action, page 3, lines 4-5. The applicants bring to the examiner's attention the first paragraph on 6 of the specification. The emulsion are used in an entirely conventional means for

sizing of fibres. The emulsion may be added to the wet-end, to the thick stock or to the thin sotck. Alternatively the ASA may be added at the size press. These methods are well known in the art.

The applicants exemplify addition in the wet end. There is no reason to suppose that use of the size press method of applying the emulsion would give results which show a completely different trend than that disclosed in the examples (wet end). Furthermore, 0.17% application based on paper weight is quite typical. The formulation of ASA with a starch is also typical in sizing applications.

35 USC 102(b) or 35 USC 103(a)

Claim 10 is rejected under 35 USC 102(b) as anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Tansley et al.

Claim 10 is a product-by-process claim. The Examiner alleges that the product of Tansley appears to be the same as or similar to the claimed product.

Claim 10 is a product-by process claim. Claim 10 claims a paper or board made by the process of claim 5. Claim 5 is directed to a method of producing a sized paper or board by adding to the wet-end or by size press a sizing agent which is an alkenyl succinic anhydride incorporating a maximum of 1 % by weight of polymeric residues and contains less than 5% by weight of olefins.

Tansley does **not produce a paper or board sized with ASA.** All examples of Tansley are directed to ketene dimer. Thus the product taught by the reference of Tansley is a ketene dimer. Therefore, the product of claim 10 cannot be anticipated by Tansley.

Furthermore, Tansley makes no mention of the polymeric residue content of the ketene dimer. There is no suggestion in Tansley to distill the ketene dimer. Thus, claim 10 cannot be anticipated or obvious in light of Tansley for two reasons: Tansley describes a sizing for paper or board containing ketene dimer not ASA. As Tansley is not directed to ASA and exemplifies only ketene dimer, there is no reason to suppose that low amounts of polymeric residues from ASA are part the product of Tansley. Thus the present product by process claim cannot be anticipated or be obvious in light of Tansley.

Reconsideration and withdrawal of the rejection of claims 1-2 and 3-20 is respectfully solicited in light of the remarks and amendments *supra*.

Since there are no other grounds of objection or rejection, passage of this application to issue with claims 1-2 and 4-20 is earnestly solicited.

Applicants submit that the present application is in condition for allowance. In the event that minor amendments will further prosecution, Applicants request that the examiner contact the undersigned representative.

Respectfully submitted,

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Enclosure: Request for Continued Examination